



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/512,061	10/21/2004	Haitao Tang	47092.00101	8579

32294 7590 02/05/2008  
SQUIRE, SANDERS & DEMPSEY L.L.P.  
14TH FLOOR  
8000 TOWERS CRESCENT  
TYSONS CORNER, VA 22182

EXAMINER
----------

BRANDT, CHRISTOPHER M

ART UNIT	PAPER NUMBER
----------	--------------

2617

MAIL DATE	DELIVERY MODE
-----------	---------------

02/05/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/512,061

Applicant(s)

TANG ET AL.

Examiner

Christopher M. Brandt

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 25-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

This Action is in response to applicant's amendment / arguments filed on August 23, 2007. **Claims 25-49** are currently pending in the present application. **This Action is made FINAL.**

### ***Response to Arguments***

Applicant's arguments filed August 23, 2007 have been fully considered but they are not persuasive.

The argued features, i.e., a method that includes determining, based on topology information of a radio access network, a spanning tree of routing paths corresponding to the shorts paths from a network node to other node— detecting a network parameter change in a network node of said network; and distributing network parameter information indicating said network parameter change from said network node to said other nodes in accordance with the spanning tree, wherein said network node is configured to generate, for each of its offspring nodes, a respective updating information and to send said respective updating information to all offspring nodes, reads upon the cited references as follows.

Cidon is discussing a topology database where it is possible to estimate the expected packet loss which is the primary parameter in determining acceptability of a link, In which a minimum hop path is chosen. Therefore, Cidon discloses the limitation, “determining, based on topology information of a radio access network, a spanning tree of routing paths corresponding to shortest paths from a network node to other nodes.” In addition, Cidon teaches that the nodes execute a distributed tree maintenance protocol in order to construct this tree and maintain

topology changes. Therefore, Cidon discloses the limitation, "detecting a network parameter change in a network node of said network." Moreover, Cidon discusses that when a node wishes to broadcast a topology update message, it gives it the right header and transmits it to all of its neighbors on the topology spanning tree. Therefore, Cidon teaches the limitation, "distributing network parameter information indicating said network parameter change from said network node to said other nodes in accordance with said spanning tree." Lastly, Cidon discloses that every node will receive every message once, over one of its tree links. Therefore, Cidon discloses the limitation, "wherein said network node is configured to update, for each of its offspring nodes, a respective updating information and to send said respective information to all offspring nodes." Cidon showed the sending and updating of information, however did not specifically show the generation of updating information and was modified by Yum to show that it would have been obvious to one of ordinary skill in the art to modify Cidon and have generation of updating information.

With regard to applicant's argument that Cidon in view of Yum fails to disclose or suggest at least "wherein said network node is configured to generate, for each of its offspring nodes, a respective updating information and to send said respective updating information to all offspring nodes," the examiner respectfully disagrees. First of all, the examiner clearly stated that Cidon failed to disclose this feature. However, the applicants argued that Cidon does not disclose the generation of updating information, (which the examiner agrees because the examiner used Yum to show this feature), however, makes no mention as to why Yum fails to cure the deficiencies. The applicant's simply state on page 12 line 19, that Yum fails to cure the deficiencies of Cidon but makes no attempt in defending this position. Nonetheless, Yum does

in fact disclose the generation of updating information on page 1284 lines 13-27, where Yum states that all routing information is assembled (i.e. generated) at the source node and put into the packet header. Moreover, on page 1285 line 8-17, Yum discloses that the packet headers should contain all routing information for use in each (i.e. respective) of the intermediate nodes. Therefore, Cidon in view of Yum disclose "wherein said network node is configured to generate, for each of its offspring nodes, a respective updating information and to send said respective updating information to all offspring nodes."

With regard to applicant's argument that Neumiller fails to cure the deficiencies of Cidon and Yum, the examiner respectfully disagrees. As stated in the previous paragraph, Cidon and Yum disclose the argued limitation, therefore, the argument regarding Neumiller is moot.

As a result, the argued features are written such that they read upon the cited references.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time

a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 25, 28-40, 42-44, and 46-47** are rejected under 35 USC 103(a) as being anticipated by **Cidon et al. (Control Mechanisms for High Speed Networks, hereinafter Cidon)** in view of **Yum et al. (Multicast Source Routing in Packet-Switched Networks, hereinafter Yum)**.

Consider **claim 25 (and similarly applied to claim 49)**. Cidon discloses a method comprising:

determining based on topology information of a radio access network, a spanning tree of routing paths corresponding to shortest paths from a network node to other nodes (301.1.5 lines 1-13, read as in the topology data base, it is possible to estimate the expected packet loss which is the primary parameter in determining acceptability of a link. Among the subset of acceptable links, a minimum hop path is chosen);

detecting a network parameter change in a network node of said network (305.1.5 lines 37-42, read as the nodes execute a distributed tree maintenance protocol in order to construct this tree and maintain topology changes); and

distributing network parameter information indicating said network parameter change from said network node to said other nodes in accordance with said spanning tree (301.1.5 lines 42-46, read as when a node wishes to broadcast a topology update message, it gives it the right header and transmits it all its neighbors on the topology spanning tree),

wherein said network node is configured to update, for each of its offspring nodes, a respective updating information and to send said respective updating information to all offspring nodes (301.1.5 lines 48-50, read as every node will receive every message once, over one of its tree links. Therefore, the updating information was generated in order for the node to send the message).

Although, Cidon disclosed the claimed invention, he failed to explicitly state the generation of updating information.

However, Yum discloses generation of updating information (page 1284 column 2 lines 13-27, read as all routing information is assembled at the source node and put into the packet header).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Yum into the invention of Cidon in order to progress the packet toward its destination (page 1284, column 2 lines 13-27).

Consider **claim 42**. Cidon discloses a network node for distributing a network parameter information to other network nodes of a transmission network, said network node being configured to detect a change in a network parameter related to said network node (305.1.5 lines 37-42, 301.1.5 lines 42-46, read as the nodes execute a distributed tree maintenance protocol in order to construct this tree and maintain topology changes), and to distribute said network

parameter information indicating said network parameter change towards said other network nodes in response to said detection and in accordance with a spanning tree of routing paths corresponding to shortest paths from said network node to said other nodes (301.1.5 lines 1-13, read as in the topology data base, it is possible to estimate the expected packet loss which is the primary parameter in determining acceptability of a link. Among the subset of acceptable links, a minimum hop path is chosen. When a node wishes to broadcast a topology update message, it gives it the right header and transmits it all its neighbors on the topology spanning tree), wherein said network node is configured to update for each of its offspring nodes a respective updating information and to send said respective updating information to all offspring nodes (301.1.5 lines 48-50, read as every node will receive every message once, over one of its tree links, and will forward it to the other tree links. Therefore, the updating information was generated in order for the nodes to send and receive the message).

Although, Cidon disclosed the claimed invention, he failed to explicitly state the generation of updating information.

However, Yum discloses generation of updating information (page 1284 column 2 lines 13-27, read as all routing information is assembled at the source node and put into the packet header).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Yum into the invention of Cidon in order to progress the packet toward its destination (page 1284, column 2 lines 13-27).

Consider **claim 46**. Cidon discloses a network node for distributing a network parameter information to other network nodes of a radio access network, said network node being



configured to receive a network parameter information from an upper node, to update a stored parameter information according to said received network parameter information, and to distribute said network parameter information to its offspring network nodes based on a updating information included in said network parameter information, said update information being derived from a spanning tree routing topology, wherein said network node is configured to update said update information in said network parameter information before distributing said network parameter information to said other nodes (301.1.5 lines 37-50, read as the node executes a distributed tree maintenance protocol in order to construct this tree and maintain it despite topology changes in the network. When a node wishes to broadcast a topology update message, it gives it the right header and transmits it all its neighbors on the topology spanning tree. If a broadcast packet arrives over a tree link, it is forwarded over the other tree links. Every node will receive every message once, over one of its tree links, and will forward it to the other tree links).

Cidon discloses the claimed invention except he fails to disclose branching information (Cidon discloses updating information).

However, Yum discloses branching information (page 1285 column 2 lines 41-43, read as in Branch-by-Branch coding, the address tree is broken up into branches at the root node and the codes for each branch follows one another).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Yum into the invention of Cidon in order to multicast packets from a source node to a set of destination nodes via a set of intermediate nodes (page 1285 column 2 lines 30-39).

Consider **claim 28 and as applied to claim 25**. Cidon and Yum disclose wherein said network parameter information relates to a QoS-related parameter (301.1.1, column 1 lines 36-40).

Consider **claim 29 and as applied to claim 28**. Cidon and Yum disclose wherein said network parameter information comprises at least one of a link state, a link utilization, a node utilization, and a macro diversity combining load (301.1.5 column 1 lines 1-13).

Consider **claim 30 and as applied to claim 25**. Cidon and Yum further disclose of deriving said topology information from at least one routing table (301.1.3 column 2 lines 30-37).

Consider **claim 31 and as applied to claim 30**. Cidon and Yum disclose wherein one routing table is provided for each network node (301.1.3 column 2 lines 30-37).

Consider **claim 32 and as applied to claim 31**. Cidon and Yum disclose wherein said one routing table provides a branch information for each offspring node of said network node (page 1285 line 30 – page 1286 line 10).

Consider **claim 33 and as applied to claim 32**. Cidon and Yum disclose wherein said branch information indicates branches of the concerned offspring node (page 1285 line 30 – page 1286 line 10).

Consider **claim 34 and as applied to claim 25**. Cidon and Yum further disclose of deriving said topology information from a link state database of a routing protocol of said transmission network (301.1.3 column 2 lines 30-37).

Consider **claim 35 and as applied to claim 25**. Cidon and Yum further disclose of obtaining said topology information by running a flooding scheme and a shortest-path-first algorithm (301.1.5 column 1 lines 1-35).

Consider **claim 36 and as applied to claim 25**. Cidon and Yum further disclose of deciding on those parameters to be included in said network parameter information based on said topology information (301.1.3 column 2 lines 37-56).

Consider **claim 37 and as applied to claim 25**. Cidon and Yum disclose wherein said network parameter information comprises said updating information sent to each offspring node (301.1.3 column 2 lines 37-56).

Consider **claim 38 and as applied to claim 37**. Cidon and Yum disclose wherein said updating information comprises a branch information, a parameter update information and a node identification of the network node at which said network parameter change has occurred (page 1285 line 30 – page 1286 line 10).

Consider **claim 39 and as applied to claim 37**. Cidon and Yum disclose further comprising distributing a received updating information from an offspring node of said network node to an offspring node of said offspring node based on said branch information (page 1285 line 30 – page 1286 line 10).

Consider **claim 40 and as applied to claim 37**. Cidon and Yum disclose further comprising updating a parameter information stored at said offspring node using said updating information (page 1285 line 30 – page 1286 line 10).

Consider **claim 43 and as applied to claim 42**. Cidon and Yum disclose wherein said spanning tree is derived from a topology information of said transmission network (301.1.3 column 2 lines 30-37).

Consider **claim 44 and as applied to claim 43**. Cidon and Yum disclose wherein said network is configured to decide on those parameters to be included in said network parameter information based on said topology information (301.1.3 column 2 lines 37-56).

Consider **claim 47 and as applied to claim 46**. Cidon and Yum disclose wherein said other nodes are offspring nodes of said network node (page 1285 line 30 – page 1286 line 10).

**Claims 26-27, 41, 45, and 48** are rejected under 35 USC 103(a) as being anticipated by **Cidon et al. (Control Mechanisms for High Speed Networks, hereinafter Cidon)** in view of **Yum et al. (Multicast Source Routing in Packet-Switched Networks, hereinafter Yum)** and further in view of **Neumiller et al. (WO 00/70782, hereinafter Neumiller)**.

Consider **claim 26 and as applied to claim 25**. Cidon and Yum disclose the claimed invention except wherein said network parameter information is used in a network operation and management procedure in a radio access network.

However, Neumiller discloses wherein said network parameter information is used in a network operation and management procedure in a radio access network (page 1 line 13 – page 2 line 10, read as wireless communication systems).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Neumiller into the inventions of Cidon

and Yum in order to simultaneously handle a call by two different base stations if a remote unit moves within a particular area (page 1 lines 13-33).

Consider **claim 27 and as applied to claim 26**. Cidon, Yum, and Neumiller disclose wherein said network operation and management procedure is a macro diversity combining MDC point selection procedure (page 9 line 34 – page 10 line 28).

Consider **claim 41 and as applied to claim 25**. Cidon and Yum disclose the claimed invention except wherein said transmission network is a radio access network based on internet protocol technology.

However, Neumiller discloses wherein said transmission network is a radio access network based on internet protocol technology (page 6 lines 12-26, read as all frames transmitted to switch is done so via a packet protocol such as Internet Protocol (IP)).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Neumiller into the inventions of Cidon and Yum in order to allow for the delivery of significantly more content and functionality.

Consider **claims 45 and 48 and as applied to claims 42 and 46**. Cidon and Yum disclose wherein said network node is a base station device of a radio access network.

However, Neumiller discloses wherein said network node is a base station device of a radio access network (page 1 line 13 – page 2 line 10, read as wireless communication systems).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Neumiller into the inventions of Cidon

and Yum in order to simultaneously handle a call by two different base stations if a remote unit moves within a particular area (page 1 lines 13-33).

### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Hand-delivered responses** should be brought to

Customer Service Window  
Randolph Building  
401 Dulany Street

Application/Control Number:  
10/512,061  
Art Unit: 2617

Page 14

Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Brandt whose telephone number is (571) 270-1098.

The examiner can normally be reached on 7:30a.m. to 5p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

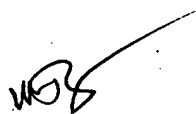
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.



Christopher M. Brandt

C.M.B./cmb

January 24, 2008



**WILLIAM TROST**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**